

No. 800,788.

PATENTED OCT. 3, 1905.

T. A. BLAKELY.
ANTIFRICTION BEARING.
APPLICATION FILED NOV. 16, 1904.

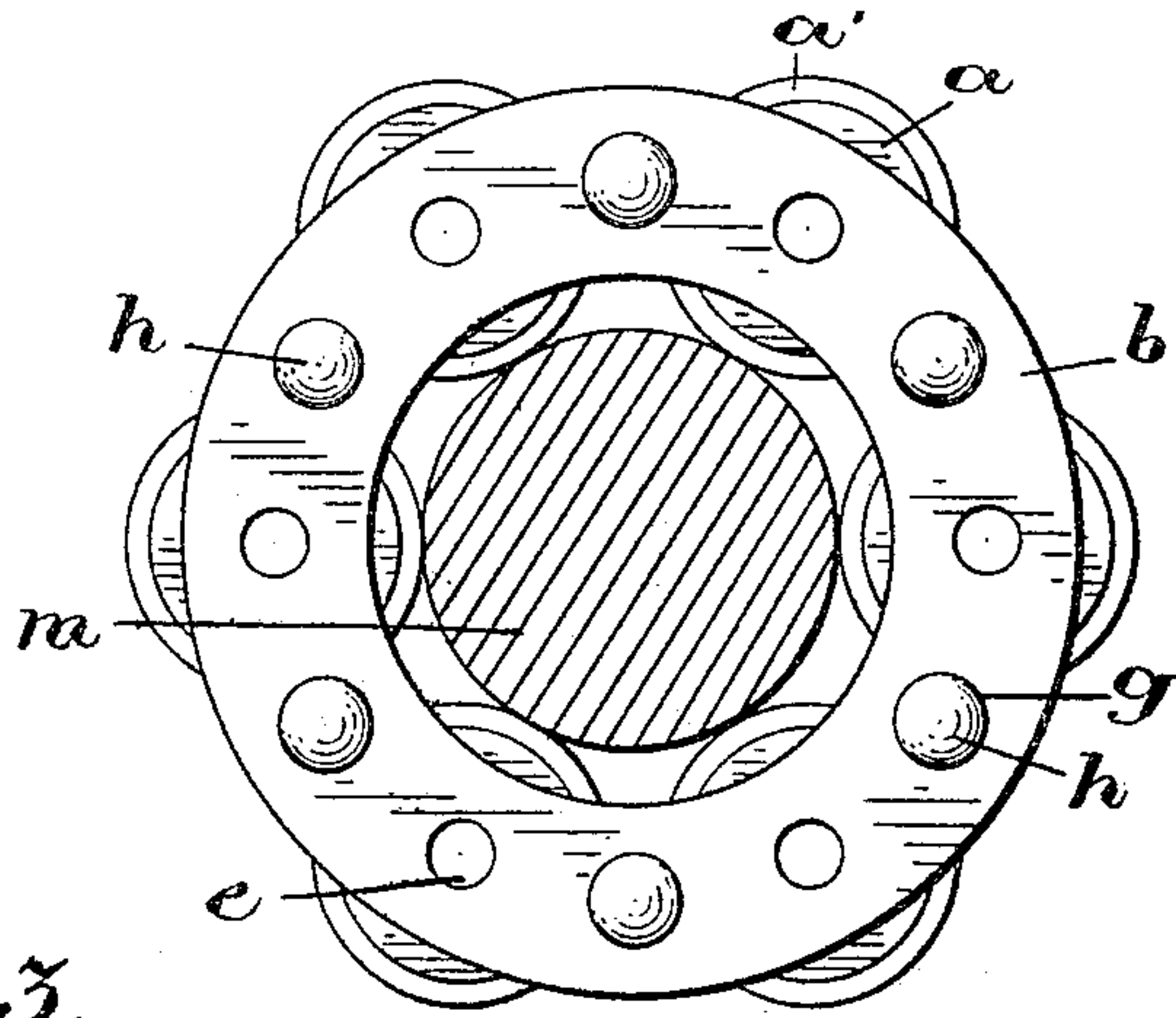


Fig. 3.

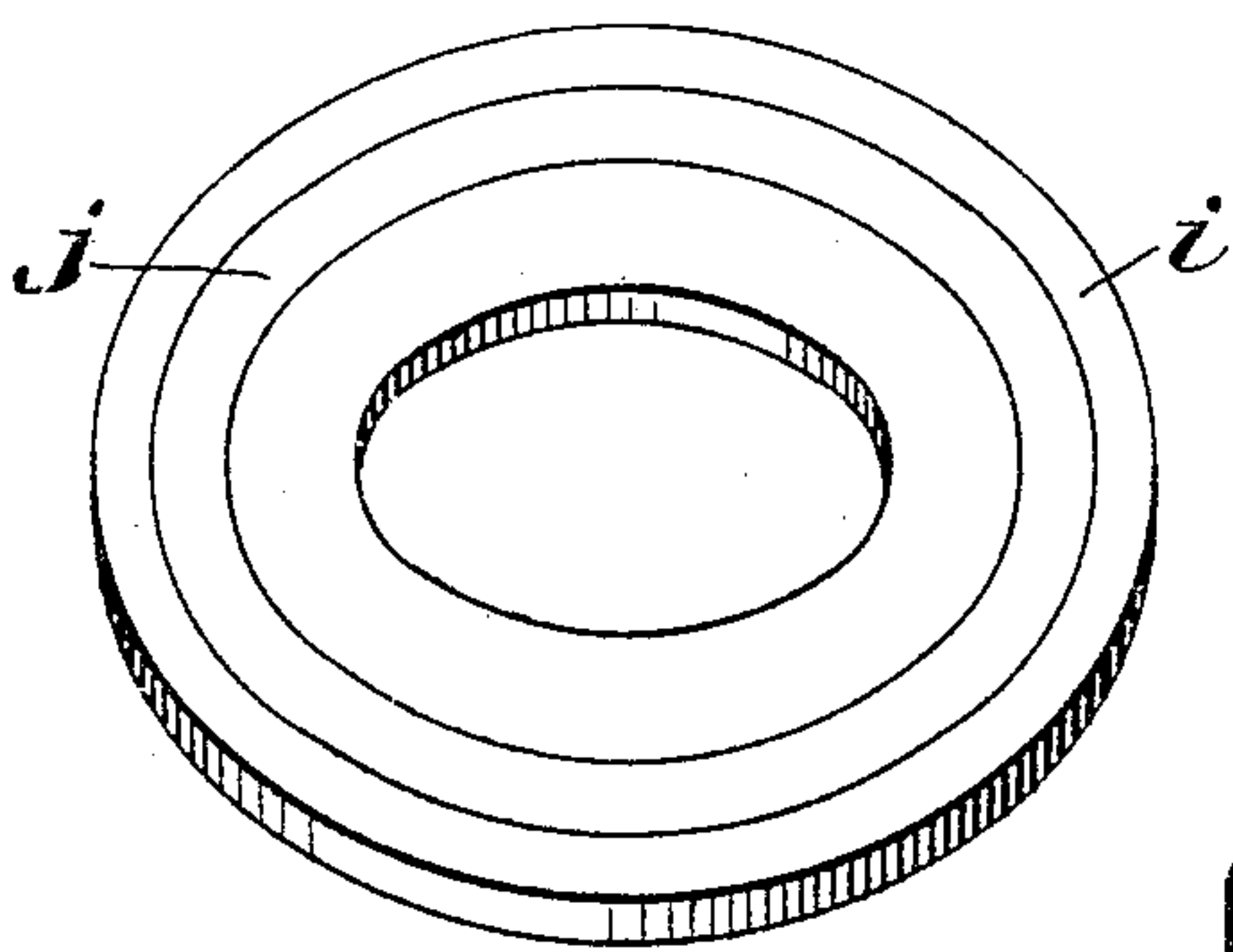


Fig. 1.

Fig. 4.

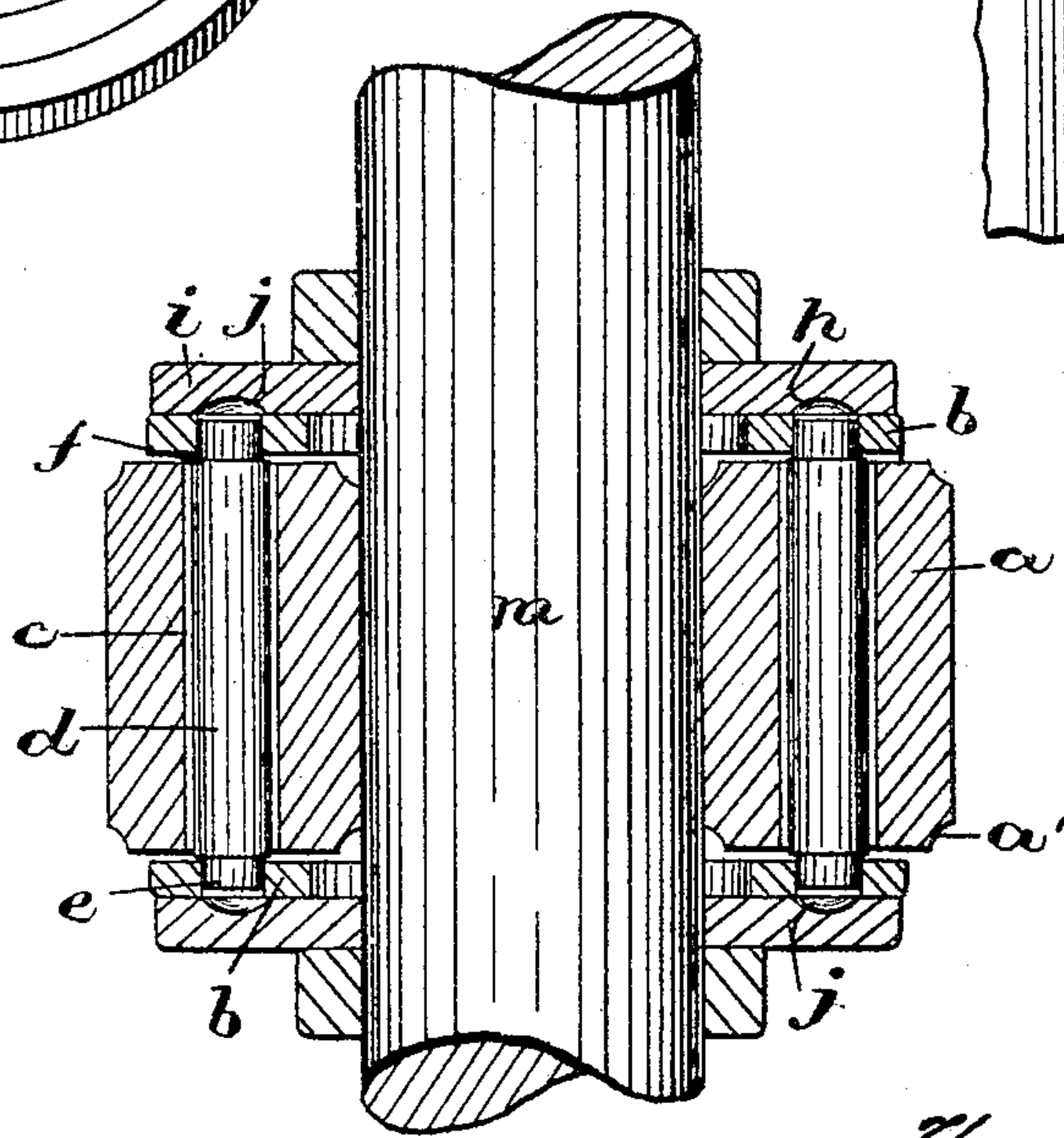
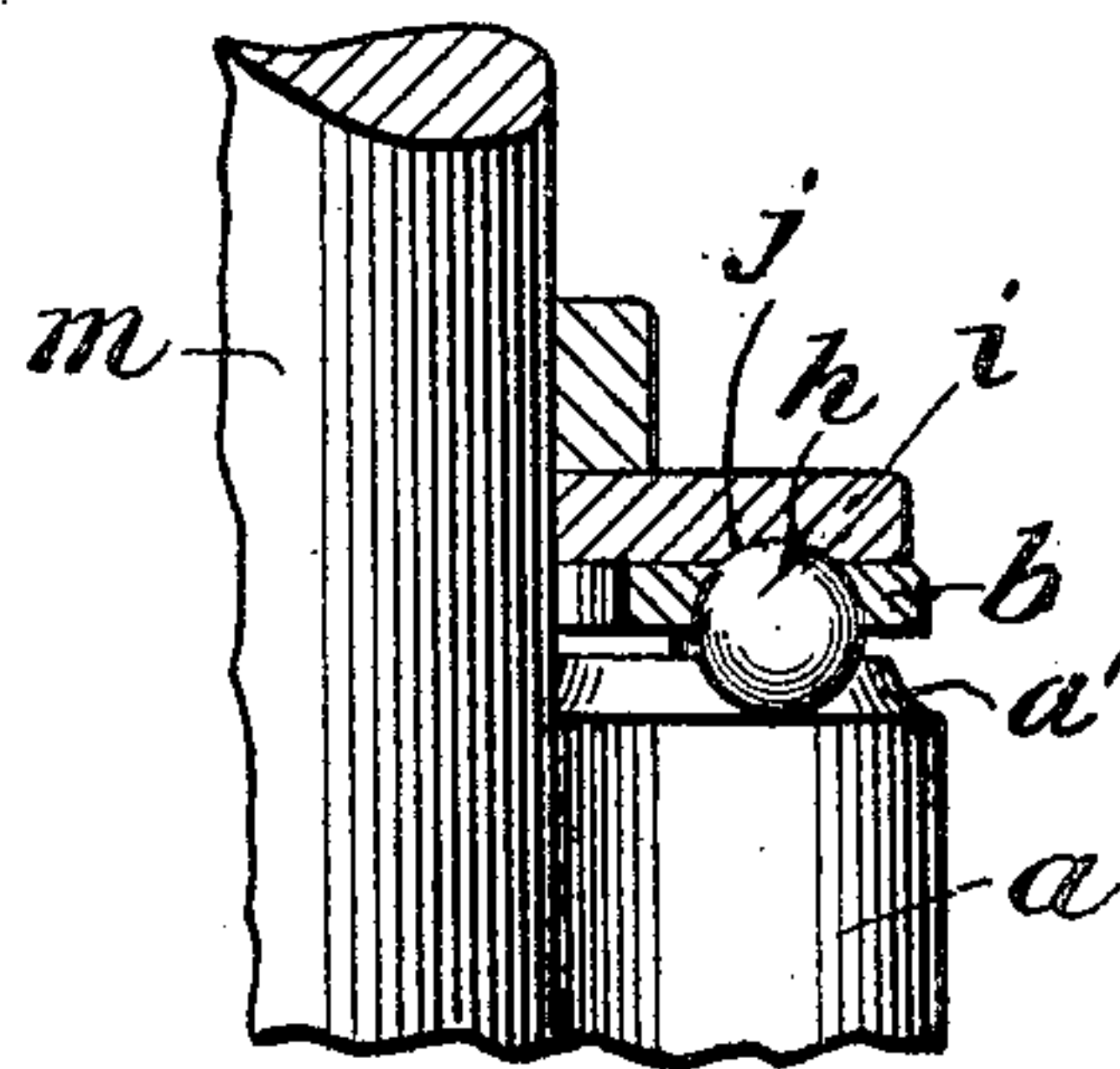


Fig. 2.

Witnesses.

H. L. Trimble.
L. F. Bueck.

Inventor.

Thomas A. Blakely
by G. H. B. Bueck
his attorney

UNITED STATES PATENT OFFICE.

THOMAS A. BLAKELY, OF FLESHERTON, CANADA, ASSIGNOR OF ONE-HALF TO FREDERICK W. HARRISON, OF OWEN SOUND, CANADA.

ANTIFRICTION-BEARING.

No. 800,788.

Specification of Letters Patent.

Patented Oct. 3, 1905.

Application filed November 16, 1904. Serial No. 232,948.

To all whom it may concern:

Be it known that I, THOMAS ALBERT BLAKELY, of Flesherton, in the county of Grey and Province of Ontario, Canada, have invented certain new and useful Improvements in Antifriction-Bearings; and I hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to that class of antifriction-bearings in which the bearing-rollers for each journal are held together in an annular set by retaining-rings revoluble collectively around the journal and independently between the retaining-rings; and the objects of the invention are—

First. To hold the component parts of the antifriction-bearing together in such a manner that there will be no direct contact of the bearing-rollers with the retaining-rings when the antifriction-bearing is in a proper state of repair and to maintain the correct alinement of the component parts of the antifriction-bearing, so that there will be no contact of the bearing-rollers with each other either while stationary or rotating, so that under all conditions of load the frictional contact of the bearing-rollers upon the bearing parts of the journal and journal-box may be minimized, thus providing for the free revolution of the bearing-rollers independently between the retaining-rings. In carrying out this object the ends of the bearing-rollers are beveled and case-hardened to form the bearing parts for the bearing-balls, which are interposed between each adjacent pair of beveled ends to not only constitute their spacing means but also to equalize the load upon them by forming a rolling contact with their beveled ends, so that the excess of load upon any one bearing-roller may be evenly distributed to the remaining bearing-rollers, the bearing-balls being retained in ball-retaining apertures or recesses formed through or in the inner faces of the retaining-rings.

Second. To evenly and correctly space the retaining-rings by forming centrally through the bearing-rollers longitudinal bores for the tie-rods, the ends of which pass through corresponding apertures in the retaining-rings and, being of a lesser diameter than the body portions, form abutting shoulders for the inner faces of the retaining-rings to engage them when the parts are assembled, the bores through the bearing-rollers being of greater

diameter than the body portions of the tie-rods, so that there will be no contact of the bearing-rollers therewith.

Third. To maintain the bearing-rollers within the ball-apertures by washers placed against the outer side faces of the retaining-rings and forming in the arresting-rings annular ball-races opposed to those parts of the bearing-balls projecting through the retaining-rings.

These objects are attained by the construction hereinafter set forth, and illustrated in the accompanying drawings, in which—

Figure 1 is a transverse sectional view of the bearing, taken between the washer and retaining-ring. Fig. 2 is a longitudinal section through the bearing. Fig. 3 is a perspective view of one of the washers looking at its inner face. Fig. 4 is a longitudinal section similar to Fig. 2, taken through the bearing-balls.

Like letters of reference refer to like parts throughout the specification and drawings.

The bearing-rollers *a*, having beveled ends *a'*, are placed between the inner faces of two annular retaining-rings *b*, with sufficient clearance between the rollers and retaining-rings to prevent them contacting each other. Formed centrally through the bearing-rollers *a* are longitudinal bores *c*, and passing through the bores *c* are the tie-rods *d* for holding the retaining-rings together, the ends *e* of the tie-rods being of a lesser diameter than the body portions to form abutting shoulders *f* to engage and properly position the retaining-rings relatively to each other and maintain them evenly spaced. In the retaining-rings *b*, intermediate the centers of the bearing-rollers *a*, are ball-apertures *g*, and contained in the ball-apertures *g* are bearing-balls *h* to contact the beveled ends of the bearing-rollers, to evenly space them, and constitute the bearings upon which they independently revolve between the retaining-rings, the ends of the bearing-rollers and the bearing-balls being case-hardened to minimize the friction of their contacting parts. The ball-apertures *g* may be of a lesser diameter than the bearing-balls *h*, so that the bearing-balls cannot be moved entirely through them under ordinary conditions, and located upon the outer faces of the retaining-rings *b* are washers *i*, having annular ball-races *j* to receive the projecting parts of the bearing-balls *h*. The washers *i* are revolubly opposed to the outer faces of the retaining-rings *b* and are prevented from

lateral displacement upon the journal *m* by
lock nuts or collars *h*, fixed upon the axle *l*
at the ends of the journal *m*. The journal *m*
constitutes the inner bearing part for the
5 bearing-rollers *a*, and the journal-box is pro-
vided with a bearing part concentric with the
journal *m*.

During the rotation of the axle within a
stationary journal-box or the rotation of the
10 journal-box around a stationary axle the set
of bearing-rollers, with the retaining-rings,
revolve collectively, and during such collect-
ive revolution each bearing-roller revolves
independently upon the bearing-balls between
15 the retaining-rings, the bearing-balls not only
forming a minimum bearing-surface for the
beveled ends of the rollers, but also maintain-
ing the bearing-rollers properly spaced and
in correct alinement, the washers, with the
20 annular ball-races, maintaining the bearing-
balls in the ball-apertures and receiving part
of the load upon the bearing-rollers.

Having thus fully described my invention,
what I claim as new, and desire to secure by
25 Letters Patent, is—

An antifriction-bearing comprising an an-
nularly-arranged set of antifriction-rollers
having longitudinally-disposed bores and bev-
eled ends, two annular retaining-rings at the
ends of and free from contact with the anti- 30
friction-rollers having bolt-apertures alining
with the longitudinal bores and ball-apertures
between the bolt-apertures, tie-rods of a lesser
diameter than and passing through the bores
of the bearing-rollers and bolt-apertures and 35
having abutting shoulders to engage the in-
ner faces of the retaining-rings, antifriction-
balls contained in the ball-apertures of the
retaining-rings to contact the beveled ends of
the antifriction-rollers and form a rolling 40
contact therewith, and washers having annu-
lar ball-races to receive those parts of the
balls projecting beyond the retaining-rings
to position the balls against the beveled ends
of the antifriction-rollers. 45

Flesherton, November 11, 1904.

THOMAS A. BLAKELY.

In presence of—

WM. H. BRENT,

W. L. WRIGHT.